

Application No. 10/518,848
Amdt. Dated: November 28, 2007
Reply to Office Action Dated: September 13, 2007

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A computed tomography apparatus which includes:
a radiation source that emits radiation that traverses an examination zone, wherein the radiation source rotates around the examination zone along a longitudinal axis;
a detector arrangement that detects radiation that traverses the examination zone, wherein the detector arrangement is configured for displacement, with respect to the radiation source, in a direction along the longitudinal axis; and
a first drive unit configured to displace the detector arrangement along the longitudinal axis so that substantially all transmission radiation that traverses the examination zone bypasses the detector arrangement and scattered radiation that traverses the examination zone illuminates the detector arrangement.
— a device with which transmission radiation having traversed an examination zone is attenuated such that its intensity incident on the detector arrangement does not significantly exceed the intensity of radiation scattered in the examination zone and incident on the detector arrangement.
2. (Previously presented) The computed tomography apparatus as claimed in claim 1, in which the radiation source is arranged to form an essentially fan-shaped radiation beam and the detector arrangement comprises a plurality of detector elements which are arranged in rows and columns in conformity with the length and the width, respectively, of the cross-section of the radiation beam in the detector plane.
3. (Previously presented) The computed tomography apparatus as claimed in claim 1, in which the detector arrangement comprises a plurality of detector elements which are arranged in a row.

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4. (Currently amended) The computed tomography apparatus as claimed in claim 1, further including: in which the device includes a source first collimator which is arranged with respect to on the radiation source, the radiation source or the first collimator being arranged so as to be offset from relative to the radiation source one another in a direction perpendicular to a propagation direction of the radiation beam in such a manner that the transmission radiation traversing having traversed an object to be examined in the examination zone substantially bypasses is not incident to a significant extent on the detector arrangement.

5. (Currently amended) The computed tomography apparatus as claimed in claim 4, wherein the source collimator is configured for displacement in the direction perpendicular to the propagation direction of the radiation beam, and further including in which the device includes a second first-drive unit for selectively displacing the radiation source or the source first collimator with respect to the radiation source relative to one another in such a manner that the transmission radiation traversing the examination zone substantially bypasses the detector arrangement only scattered radiation emanating from the object to be examined in the examination zone at different angles is detected.

6. (Currently amended) The computed tomography apparatus as claimed in claim 1, further including in which the device includes a detector second collimator which is arranged between the examination zone and the detector arrangement, wherein the detector collimator and includes a sub-region that attenuates whereby the transmission radiation so that an intensity of the transmission radiation illuminating the detector arrangement is substantially equal to an intensity of the scattered radiation illuminating the detector arrangement having traversed the object to be examined in the examination zone is partly stopped.

7. (Currently amended) The computed tomography apparatus as claimed in claim 6, wherein in which the sub-region includes is provided with an opening through which wherethrough a part of the transmission radiation traverses substantially unattenuated and illuminates incident on the region reaches the detector arrangement.

8. (Currently amended) The computed tomography apparatus as claimed in claim 1, wherein the radiation source is configured for displacement along the longitudinal axis, and further including: in which the device is formed by a detector arrangement which is positioned so as to be shifted in a direction perpendicular to a propagation direction of the radiation beam in such a manner that the radiation having traversed the object to be examined in the examination zone is directed at least substantially so that the transmission radiation bypasses the detector arrangement.

a source collimator; and

a second drive unit that displaces the radiation source, with respect to the source collimator, along the longitudinal axis so that the transmission radiation traversing the examination zone substantially bypasses the detector arrangement.

9. (Currently amended) The computed tomography apparatus as claimed in claim [[8]] 1, wherein in which the device includes a second drive unit for displacing the detector arrangement in such a manner that only the scattered radiation illuminates the detector arrangement emanating from the object to be examined in the examination zone at different angles is detected.

10. (Currently amended) A computed tomography apparatus, comprising:

a radiation source that emits radiation that traverses an examination zone, wherein the radiation source rotates about the examination region along an axis of rotation;
a detector arrangement that detects radiation that traverses the examination zone; and
a device with which radiation having traversed an examination zone is stopped at least to such an extent that its intensity which is incident on the detector arrangement does not significantly exceed the intensity of radiation scattered in the examination zone and incident on the detector arrangement, wherein the device includes a drive unit for displacing the detector arrangement in such a manner that scattered radiation emanating from an object to be examined in the examination zone at different angles is detected.

a collimator arranged between the examination zone and the detector arrangement,

wherein the collimator includes a sub-region that attenuates the transmission radiation so that an intensity of the transmission radiation traversing the sub-region and illuminating the detector arrangement is substantially equal to an intensity of the scattered radiation illuminating the detector arrangement, and

wherein the sub-region includes an opening through which transmission radiation traverses substantially unattenuated and illuminates the detector arrangement.

11. (Currently amended) A method, comprising:

selectively directing a radiation beam with respect to a detector arrangement so that attenuating transmission radiation, corresponding to the radiation beam, that within a radiation beam after the beam traverses an examination zone and bypasses the detector arrangement, wherein the attenuated transmission radiation has an intensity that is about the same as an intensity of scatter radiation; and

detecting the attenuated transmission radiation and the scattered radiation, corresponding to the radiation beam, that traverses the examination zone and illuminates the detector arrangement with a detector.

12. (Currently amended) The method of claim 11, wherin the act of selectively directing the radiation beam further including directing the transmission radiation to bypass the detector includes selectively shifting the detector arrangement in a direction perpendicular to a propagation direction of the radiation beam.

13. (Currently amended) The method of claim 11, wherin the act of selectively directing the radiation beam further including includes selectively shifting positioning a source collimator with respect to a radiation source that emits the radiation beam in a direction perpendicular to a propagation direction of the radiation beam to direct the beam so that the transmission radiation bypasses the detector.

14. (Currently amended) The method of claim 11, wherein the act of selectively directing the radiation beam further including includes selectively shifting positioning a radiation source that emits the radiation beam with respect to a source collimator in a direction perpendicular to a propagation direction of the radiation beam to direct the beam so that the transmission radiation bypasses the detector.

15. (Currently amended) The method of claim 11, wherein the transmission and the scatter scattered radiation are concurrently detected during a same data acquisition cycle.

16. (Currently amended) The method of claim [[11]] 15, further including attenuating the transmission radiation using a device material having with a thickness configured to attenuate the transmission radiation so that its intensity is about the same as the intensity of the scattered scatter-radiation.

17. (Currently amended) The method of claim [[11]] 16, wherein the device includes an opening through which the transmission radiation passes through substantially unattenuated attenuating the transmission radiation includes collimating the transmission radiation so that only part of the transmission radiation illuminates the detector.

18. (Currently amended) The computed tomography apparatus method of claim 10 [[11]], wherein the radiation source is configured to move in a direction along the axis of rotation, and further including positioning the detector so that only scatter radiation illuminates the detector;

a source collimator; and

a drive unit that selectively displaces the radiation source with respect to the source collimator along the axis of rotation;

wherein the drive unit displaces the radiation source so that the transmission radiation traversing the examination zone substantially bypasses the detector arrangement.

19. (Currently amended) The computed tomography apparatus of claim [[1]] 10, wherein the intensity of the attenuated transmission radiation is greater than the intensity of the scattered radiation further including a drive unit that laterally displaces the detector arrangement, with respect to the radiation source, in a direction along the axis of rotation so that substantially all transmission radiation traversing the examination zone bypasses the detector arrangement and scattered radiation traversing the examination zone illuminates the detector arrangement.

20. (Currently amended) The computed tomography apparatus of claim [[1]] 10, wherein the intensity of the attenuated transmission radiation is non-zero further including:

a source collimator configured to move in a direction along the axis of rotation with respect to the radiation source; and

a drive unit for selectively displacing the source collimator along the axis of rotation;

wherein the drive unit selectively displaces the source collimator, with respect to the radiation source, so that the source collimator is offset from the radiation source so that the transmission radiation traversing the examination zone substantially bypasses the detector arrangement.